

## **REMARKS**

Reconsideration and allowance in view of the foregoing amendments and the following remarks are respectfully requested. Claims 6, 7, 11 and 17 were amended. Claims 5 and 29 were previously cancelled. Favorable consideration of pending Claims 1-4 and 6-28 is respectfully requested.

### **Objections to the Drawings**

The Applicant disagrees with the assertion that FIGS. 1 and 4 should be labeled as prior art. FIGS. 1 and 4 are both relevant as exemplary embodiments of the invention as described and claimed within the present application, and therefore should not be labeled as prior art. For example, FIG. 1 illustrates a language modeling agent 104, which develops and maintains a language model data structure using Markov transition probabilities between individual characters of a corpus. *See Application, Page 7.* Thus, FIG. 1 is not a ubiquitous electronic device as asserted by the Office. Likewise, FIG. 4 is not a ubiquitous electronic device. FIG. 4 graphically represents a logical and architectural model of the operation of the data structure memory manager 218 according to an implementation of the present invention. *See Application, Page 16.* Thus, the figures and the corresponding descriptions on pages 16 and 17 of the subject application clearly relate to the claimed invention. The Examiner is respectfully pointed to section 608.02(g) of the MPEP regarding illustrations of prior art, which states that prior art drawings must only illustrate that which is “old”. Therefore, because FIGS. 1 and 4 do not only illustrate that which is old, these

figures should not be labeled as prior art. Withdrawal of the objections is respectfully requested.

### **Rejections Under 35 U.S.C. §101**

In response to the rejection of Claims 11-22 under 35 U.S.C. §101, the Applicant respectfully disagrees. However, Claim 11 was amended to recite “building a data structure, **across a system memory of a computer system and an extended memory of the computer system**, of corpus segments representing a dynamic context of item dependencies within the segments” and thus produces a result. (*emphasis added*). Likewise, Claim 17, was amended to recite a “data structure, generated by a computer system **across memory of the computer system** as a statistical language model”. (*emphasis added*). Therefore, for at least these reasons, withdrawal of rejections under 35 U.S.C. §101 is respectfully requested.

### **Rejections Under 35 U.S.C. §112**

Claims 6 and 7 have been amended to correct dependencies. Withdrawal of the rejection is respectfully requested.

### **Rejections Under 35 U.S.C. §102(b)**

Claims 1-4 and 9-28 were rejected under 35 U.S.C. §102(b) as being anticipated by Marquez, titled “Statistical Learning” (hereinafter “Marquez”). The Applicant respectfully traverses this rejection.

**Claim 1** recites “managing storage of the data structure across a system memory of a computer system and an extended memory of the computer system” which is not disclosed, taught or suggested by Marquez. Beginning at page 15 of the subject application, an exemplary implementation of management of a data structure in memory is described. According to one aspect of the invention, data structure memory manager utilizes system memory as well as extended memory to maintain the DOMM data structure. More specifically, data structure memory manager employs a WriteNode function and a ReadNode function to maintain a subset of the most recently used nodes of the DOMM data structure in a first level cache of a system memory, while relegating least recently used nodes to extended memory (e.g., disk files in hard drive, or some remote drive), to provide for improved performance characteristics. In addition, a second level cache of system memory is used to aggregate write commands until a predetermined threshold has been met, at which point data structure memory manager make one aggregate WriteNode command to an appropriate location in memory.

Marquez does not disclose, teach or suggest managing storage of the data structure as claimed. Indeed, Marquez does not even mention a memory. The Office asserts in a note that the “Examiner interprets all arithmetic computations of this magnitude are completed on a computer medium with standard memory”. *See Office Action Dated August 16, 2004.* The Applicant respectfully disagrees. Such a statement does not comport with the requirements of a *prima facie* case of anticipation in which a “claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference”. *See MPEP* §2131. In this case, the Examiner has not made a

showing as to where the “managing” as claimed is disclosed in the reference. Accordingly, it is respectfully submitted that a *prima facie* case of anticipation has not been established because Marquez fails to disclose or even mention a memory, much less managing a memory as claimed. Therefore, withdrawal of the rejection of claim 1 is respectfully requested.

**Claims 2-10** depend either directly or indirectly from claim 1. Accordingly, these claims are allowable for at least this reason. Additionally, these claims are also allowable based on their own recited features, which are not disclosed, taught or suggest by Marquez. Therefore, withdrawal of the rejections of claims 2-10 is respectfully requested.

**Claim 11** has been amended, and as amended [portions of the amendment appear in bold italics below] recites a method for predicting a likelihood of an item in a corpus comprised of a plurality of items, the method comprising:

- building a data structure, ***across a system memory of a computer system and an extended memory of the computer system***, of corpus segments representing a dynamic context of item dependencies within the segments;
- calculating the likelihood of each item based, at least in part, on a likelihood of preceding items within the dynamic context;
- iteratively re-segmenting the corpus; and
- predicting a likelihood of an item in the re-segmented corpus.

Marquez does not disclose, teach or suggest these aspects.

As previously described in relation to claim 1, Marquez does not disclose, teach, suggest or even mention a memory. Accordingly, it is respectfully

submitted that these claims, as amended, are not anticipated by Marquez. Therefore, withdrawal of the rejection of Claim 11 is respectfully requested.

**Claims 12-16** depend either directly or indirectly from claim 11. Accordingly, these claims are allowable for at least this reason. Additionally, these claims are also allowable based on their own recited features, which are not disclosed, taught or suggest by Marquez. Therefore, withdrawal of the rejections of claims 12-16 is respectfully requested.

**Claim 17** has been amended, and as amended [portions of the amendment appear in bold italics below] recites a data structure, generated by a computer system *across memory of the computer system* as a statistical language model, the data structure comprising:

- one or more root nodes; and
- a plurality of subordinate nodes, ultimately linked to a root node, cumulatively comprising one or more sub-trees, wherein each node of a sub-tree represents, one or more items of a corpus and includes a measure of a Markov transition probability between the node and another linked node.

Marquez does not disclose, teach or suggest these aspects.

Again, as previously described in relation to claim 1, Marquez does not disclose, teach, suggest or even mention a memory. Accordingly, it is respectfully submitted that these claims, as amended, are not anticipated by Marquez. Therefore, withdrawal of the rejection of Claim 17 is respectfully requested.

**Claims 18-23** depend either directly or indirectly from claim 17. Accordingly, these claims are allowable for at least this reason. Additionally, these claims are also allowable based on their own recited features, which are not disclosed, taught or suggest by Marquez. Therefore, withdrawal of the rejections of Claims 18-23 is respectfully requested.

**Claim 24** recites a modeling agent comprising “a controller, to receive a corpus” and “a data structure generator, responsive to and selectively invoked by the controller, to assign each of a plurality of segments comprising the received corpus to a node in a data structure denoting dependencies between nodes” in which “the modeling agent calculates a transitional probability between each of the nodes of the data structure to determine a predictive capability of a language model represented by the data structure and iteratively re-segments the received corpus until a threshold predictive capability is reached”. Marquez does not disclose, teach or suggest these aspects.

As previously stated, MPEP §2131 states, in part, that a “claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Accordingly, it is respectfully submitted that a *prima facie* case of anticipation has not been established because Marquez fails to disclose, teach, suggest, or even mention a “controller” or “a data structure generator, responsive to and selectively invoke by the controller” as recited in Claim 24. Therefore, withdrawal of the rejection of claim 24 is respectfully requested.

**Claims 25-27** depend either directly or indirectly from claim 24. Accordingly, these claims are allowable for at least this reason. Additionally, these claims are also allowable based on their own recited features, which are not disclosed, taught or suggested by Marquez. Therefore, withdrawal of the rejections of Claims 25-27 is respectfully requested.

**Claim 28** recites a “storage medium comprising a plurality of executable instructions including at least a subset of which, when executed, implement a language modeling agent” which is not disclosed, taught or suggested by Marquez. Indeed, Marquez does not even mention executable instructions. Accordingly, a *prima facie* case of anticipation has not been established.

Further, claim 28 recites “wherein the modeling agent dynamically re-segments the received corpus to remove segments which do not meet a minimum frequency threshold” which is not disclosed, taught or suggested by Marquez. The Office asserts pages 18, 20 and 24 of Marquez for such disclosure. The Applicant respectfully disagrees. The asserted pages merely describe a naïve Bayes stochastic model and a hidden Markov model.

Beginning at page 13 of the subject application, however, exemplary removal of segments is described. For example, the number of characters employed as context (j) by Markov probability calculator is a “dynamic” quantity that is different for each sequence of characters  $C_i, C_{i-1}, C_{i-2}, C_{i-3}$ , etc. According to one implementation, the number of characters relied upon for context (j) by Markov probability calculator is dependent, at least in part, on a frequency value for each of the characters, i.e., the rate at which they appear throughout the corpus. More specifically, if in identifying the items of the corpus Markov

probability calculator does not identify at least a minimum occurrence frequency for a particular item, it may be “pruned” (i.e., removed) from the tree as being statistically irrelevant. According to one embodiment, the minimum frequency threshold is three (3).

Marquez, however, does not disclose, teach or suggest a language modeling agent that “dynamically re-segments the received corpus to remove segments which do not meet a minimum frequency threshold” as recited in claim 28. Accordingly, for this reason and the previously recited reasons, a *prima facie* case of anticipation has not been established. Withdrawal of the rejection with respect to Claim 28 is respectfully requested.


#### CONCLUSION

All objections and rejections having been addressed, it is respectfully submitted that the present application is now in condition for allowance. Early and forthright issuance of a Notice of Allowability is respectfully requested.

Respectfully Submitted,

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